

Talking About Money



No.2

EXPLAINING PROFITABILITY AND BORROWING

by
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Introduction

This booklet is part of a series that is designed to be used by farmer discussion groups, farmer field schools and extension or advisory officers involved in agricultural or rural development.

The ability to adopt or introduce changes to agricultural production methods and non-farm enterprises depends on the availability of money. It is, therefore, very important for farmers to be able to think carefully about their financial circumstances. Predicting costs, prices, profit margins and cash flow patterns is vital for planning and decision-making and the poorer the farmer, the more important it is.

These concepts need to be explained in a way which small scale, possibly illiterate, farmers can understand. The "Talking About Money" booklets aim to introduce financial topics to farmers using a variety of tools, some of which can be used even when people are not able to read or write. The concepts are intended to provoke discussion and be used in a participatory manner.

Field officers involved in giving agricultural advice in developing countries are most commonly technical experts of some kind, e.g. agronomists, livestock, irrigation or engineering specialists. They usually do not have much experience in giving advice about money and this topic is generally avoided, apart perhaps from some simplified profit calculations. It is hoped this series will help them "talk about money" more readily and enable them to give good advice to farmers about the use of financial services such as credit.

The figures used in this book are largely fictitious and should not be taken as representative of any particular currency at any given point in time. The \$ symbol is used simply as a generic money symbol. If the book is being translated for a specific local context, the figures can be replaced with appropriate amounts in the local currency.

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1 LIVELIHOOD STRATEGIES

Aim

- To introduce the idea of “livelihood” and “livelihood strategy”
- To identify activities that are being run on a business principle

What is a livelihood?

A livelihood is any set of economic activities through which a person satisfies their basic needs and creates a life that is sustainable and fulfils their main ambitions. In rural areas most people grow crops or keep livestock to supply at least some of their own food but production is seasonal and they invariably undertake many other activities to maintain their food supply throughout the year. People may even switch from one activity to another during the day.

So although you may call yourself a farmer, you may also gather forest produce, twist rope, work as a mason or make charcoal. Another member of the family may milk the livestock, process cassava and sell produce in the market. Some people make pots, mats, tinware; they mend bicycles, build carts and do casual or regular work for other people. There are a myriad of ways to “make a living”. The question for many families is whether they can “do better”, and improve their livelihood strategy to increase their income and satisfy all their aspirations.

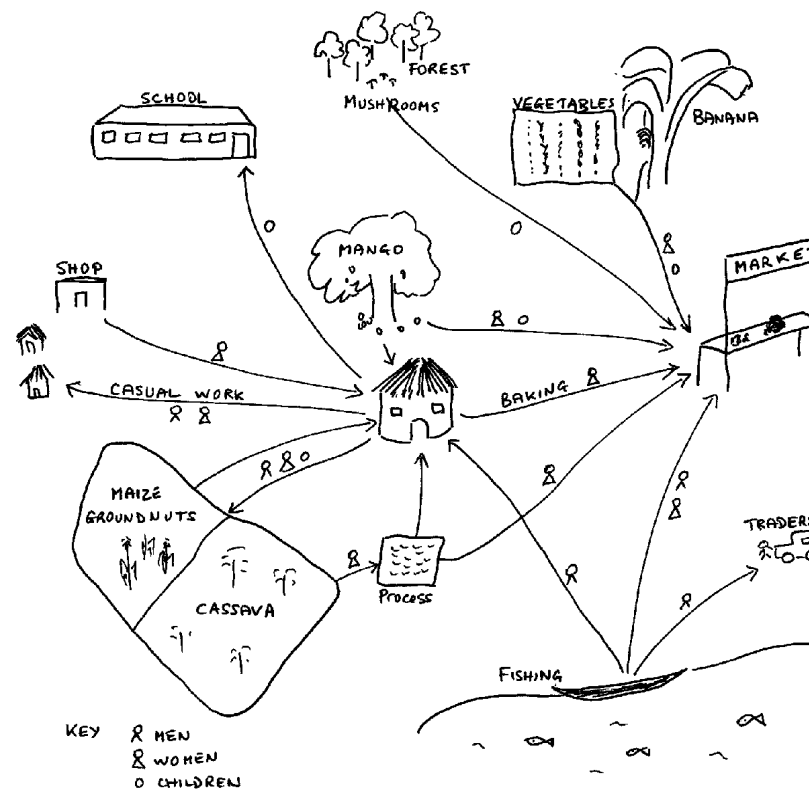


Why not stop and discuss how many members of the discussion group feel they need to “do better”? Ask yourselves some questions:

- Do you have enough to eat every year?
- Is your home comfortable and safe?
- Do you have enough money to send your children to school or buy medicines?
- Are you constantly having to borrow money?
- Is there some equipment you would like to buy to improve your home or your business?

What makes up your livelihood strategy?

The first thing to do is get a clear picture of your current livelihood strategy. What are the activities that contribute to your family's income? A good way of doing this is to make a drawing - something like this:

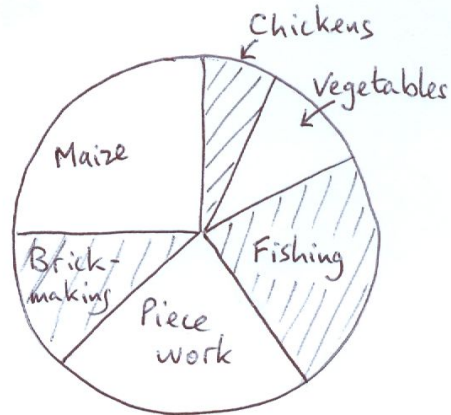


Now, working in pairs or small groups, construct diagrams which summarise the activities that make up each of your families' livelihood strategy.

It is not important how the diagram looks or whether lines or arrows are used. What is important is trying to get a complete picture of the entire household economy - all the activities that help the family to survive and manage their lives.

Now consider which activities are more important. Draw a circle representing your total cash income or your total food supply and then divide it up to show the relative importance of each contributing activity.

Like this:



Sources of income

Now compare your diagrams with the others:



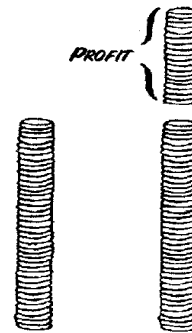
Time for a discussion

- Can you tell who is more subsistence oriented or more market oriented?
- Which activities are most popular for producing cash and which for food?
- Is it getting easier or more difficult to sell certain things?
- Which activity offers the best way of increasing your income?

Are you running a business?

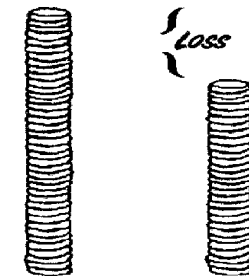
So it is common to engage in many activities to make a livelihood but are you running a “business”? If you are, then you will be deliberately producing goods or services to sell to other people and your aim will be to make a “profit”.

COST of INPUTS **VALUE of OUTPUT**



This means that you hope the value of what you produce and sell - your “output” - is greater than the cost of the inputs you used to produce it. If it is not, you would be making a “loss” and there would be no merit in continuing to undertake these activities!

COST of INPUTS **VALUE of OUTPUT**



When you run a business, profit is your income and can be used to pay for food and other family requirements.

Maybe you think of yourself as a farmer. If so, you will be trying to make a profit from your crops or your livestock and it might be your main source of income.

Some of you may be concentrating on other forms of business, like carpentry or running a small shop or processing fish. Your crops and livestock may be just a source of food for the family.

Whatever your strategy, if you want to increase your income then you need to know more about the profitability of any activities you run as business enterprises.

2 ARE YOUR FARM ENTERPRISES PROFITABLE?

Aim

- To reflect on the length of production cycles in farming
- To introduce the idea of an “accounting period”
- To learn how to work out the profit made from farm enterprises

Production cycles

Farming involves the deliberate cultivation of crops or rearing of livestock. Although farmers try to control the plants and animals they have chosen to grow, they can only do that to an extent. Living organisms are primarily governed by the natural processes of birth, growth and death. So farmers have to work with these natural processes and this makes farming quite different from other types of business enterprises.



A farmer can only start growing a crop when it is the right time for the seeds to germinate and the weather conditions enable them to grow. Then the farmer has to look after the crop while it is growing and only when the farmer is able to harvest the part of the crop which he can eat or sell, does he start to get some return. This means he must wait many weeks or months before a crop generates an output. Some tree crops may take several years!

It's the same with animals. They take months to grow big enough to sell; some may even die before they are ready, so you can see how different this is to, for example, making chairs or pots to sell. Of course some livestock products such as milk or eggs are produced nearly every day and that means these animals provide a regular income.



We call the time from when you start to rear an animal or plant a crop to the moment when you can sell or use the output from that animal or crop, the production cycle. Production cycles have a significant impact on how we work out the profitability of our activities.



Why don't you stop and write down the length of the production cycles for the common farming enterprises in your area? Can you produce some things more than once a year?

Here are some examples to get you started:

Maize	8 - 9 months
Rice	5 - 6 months
Broiler chickens	2 - 3 months

You might like to draw some crop calendars to illustrate the length of production cycles. This example represents maize growing in Zambia:

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Planting period			Weeding, cultivating and fertilizing crop			Crop matures and begins to dry out			Harvesting and marketing commences		

It is possible to estimate the profitability of an individual enterprise by basing the calculation on its production cycle. This method is very common in budgeting, i.e. when we try to predict the profitability of an enterprise in the future.

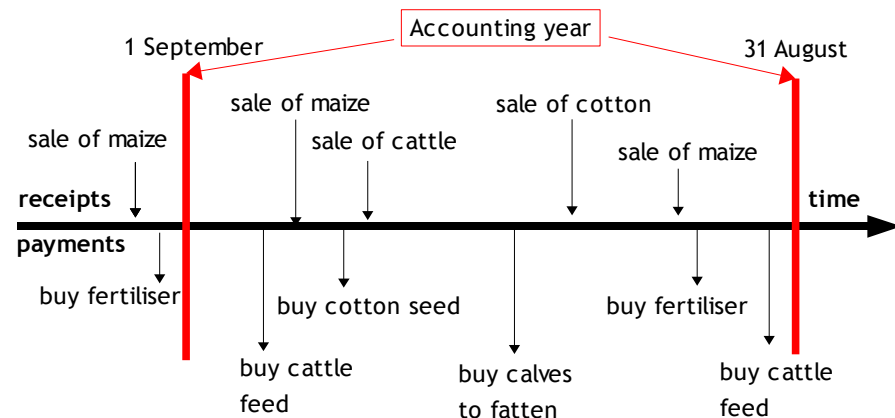
However, if we want to know how much profit we have been making from our existing enterprises, it is more accurate to choose a specific period of time and work out how much profit we have made during that time. We call this an “accounting period” and in farming it is very common to use a whole calendar year because production cycles are so long! If we were calculating the profit from a shop, we could easily use one month as an accounting period.

So let's have a look at the measurement problems that we have to solve in order to work out the profit we have made in an accounting year.

The accounting year

When we are farming as a business activity, we are involved in buying and selling things throughout the year. We do not stop and start; we keep on going and production cycles merge into each other. Sometimes we buy inputs before we need them; sometimes we don't pay for them immediately; sometimes we sell products quickly; sometimes we store them for months before selling them.

Look at the diagram below which illustrates money transactions occurring throughout the year on a farm and how selection of an accounting period cuts through those transactions:



So to work out profit accurately for our accounting year we have a number of problems to solve. For example, this farmer is buying young cattle which he feeds until they are big enough to be sold for slaughter. In our accounting year he buys some calves and sells some fat cattle, but they are not the same animals. The fat ones were bought in the previous year and the young ones will not be sold until the following year.

Similarly the grain sold at the beginning of the year came from the previous year's harvest and it is likely that some of the grain from this year's harvest has not yet been sold.

On the input side, fertiliser used on the cotton was purchased in the previous year and the fertiliser bought in the accounting year will be used in the following year. The second purchase of cattle feed will also be mostly used in the following year.

You might also notice there is no mention of buying maize seed, which suggests that this farmer keeps back some of his harvested crop to use for seed. It is also likely that he uses maize for his own family's consumption.

How then do we make reasonable estimates of the exact profit we made during this year? We have to follow some simple rules for calculating inputs and outputs.

Calculating the value of output

To estimate crop output we need to do the following:

Add up:

1. The value of the produce you have sold.
2. The value of produce that has been eaten by the family, used to replant the crop or fed to livestock.
3. The value of produce that is in store at the end of the year.



and then subtract:

The value of produce that was in store at the beginning of the year.

We can do this as a combined calculation for all our enterprises or we can do it for individual enterprises. With crops you can estimate amounts in measures such as baskets or sacks or tins but eventually you must convert these to a proper weight, so you can describe the output in kilograms or tonnes.

Then you need to multiply each amount by a price to get the value. For items you have sold this should be the actual price. For items in store or consumed you will need to use an estimated price.

Let's look at a simple example.

Godfrey grows $\frac{1}{2}$ hectare of maize and $\frac{1}{2}$ hectare of cotton.

- On 1st September he had 200 kg maize in store, including some for seed.
- During the year he sold 400 kg maize for \$120 and 750 kg cotton for \$300.
- He thinks that his family consume about 600 kg of maize during a year.
- At the end of the year, on 31st August, he had 100 kg maize in store, including some for seed.

Looking at this information, we can see that the prices Godfrey obtained when he sold his crops were 0.30 per kg for maize and 0.40 per kg for cotton.



So let's see if you can work out the value of each crop's output. Get someone to write out the table below on a board or large piece of paper and work out the answers together:

	Maize	Cotton
Sales (actual values)		
+ Home consumption valued at same price as sales (0.30)		
+ Stored maize at end of year, valued at current market price (0.35)		
Sub-total		
- Stored maize at start of year, valued at sale price (0.30)		
Crop Output		

Answers:

Maize output: $120 + 180 + 35 = 335 - 60 = 275$

Cotton output: 300 (there are only sales to take into account)

You can see that we would have gravely underestimated the output of maize without including home consumption and valuation adjustments.

Now let us consider livestock. If livestock are sold by weight, you need to express their output in kilograms but otherwise you can simply count the number of animals. You would measure the output of other products such as milk or eggs in the units in which you sell them.



When calculating livestock output, the inclusion of valuation change is really important because of the length of time that large animals take to grow to their selling weight. For example, we may start the year with a small animal weighing say 50 kg and by the end of the year it may weigh 300 kg. We have not sold anything but the animal has gained 250 kg in weight and we must value this as our output for the year.

If we start an accounting year with an animal weighing 300 kg and sell it during the year weighing 450 kg, how many kilograms should we include in our output calculation for this year? The answer is 150 kg. Likewise if you buy an animal weighing 200kg during the year and at the end of the year it weighs 400 kg, what output have you produced? The answer is 200 kg.

So to estimate the output of meat animals, we must:

Add up:

1. The value of animals you have sold.
2. The value of animals that have been eaten by the family.
3. The value of animals you possess at the end of the year.

and then subtract:

1. The value of animals purchased during the year.
2. The value of animals you had at the start of the year.

Now try the calculation on the following page.



On the 1st April you have a bullock on the farm worth \$300. During the year you sell the animal for \$500 and buy another for \$250. At the end of the accounting year on 31st March this second bullock is valued at \$350.

What is the financial value of the output from your livestock for the accounting year?

Your answer should be \$300. You add up sales of \$500 and the end of year valuation of \$350 to get \$850, and then subtract the valuation of \$300 at the beginning of the year and the purchase price of \$250 from this to arrive at \$300.

Now why don't you choose an accounting year that suits you and work out the financial output from some of your farm enterprises for that year?

Calculating input costs

The most obvious inputs used in crop and livestock production are the things we buy such as seeds, fertilizer, sprays, animal feeds and medicines. We could call these things *direct* costs - we buy them and use them up in the course of production. They are also called *variable* costs because we vary how much we buy according to how much we plan to produce.



If we hire people to work on a particular crop or livestock activity, their wages are a direct cost. However, if we hire someone to work for us all year and they do all sorts of different jobs on the farm, we call that an *indirect* or *overhead* cost. The cost of owning machinery is usually regarded as an overhead cost, as is paying rent or electricity bills and the cost of repairing buildings. We also refer to this type of input as *fixed* costs because they don't change directly in relation to how much we produce. We may keep the same machine even if we grow twice as much of a particular crop, although our operating costs such as fuel will be higher.

We will look more closely at machinery costs in Book 3.

For now we will concentrate on how we estimate direct input costs. This is what you need to do:

Add up:

1. The cost of inputs you have bought during the year.
2. The value of purchased inputs that you have in store at the start of the year (waiting to be used).

and then subtract:

The value of purchased inputs that you have in store at the end of the year (i.e. that you have not used up).

It is usual to value inputs that we have in store at their purchase price.



Here are some example input calculations for you to practise and then you should try to work out some of your own input costs.

1. *At the start of the accounting year you have \$100 worth of fertilizer stored on your farm. You purchase \$200 worth and at the end of the year you have none left. What is your fertilizer input cost for that year?*
2. *At the start of the year you have no animal feed in store. During the year you purchase some feed at a cost of \$150 and have \$30 worth left at the end of the year. What is your feed input cost for the year?*
3. *At the start of the year you have 200 kg fertilizer in store which cost you \$80. You purchase 500 kg during the year for \$250 and have 100 kg left at the end of the year. What is your fertilizer input cost for that year?*

The answers are:

1. \$300 (\$200 + \$100)
2. \$120 (\$150 - \$30)
3. \$280 (\$250 + \$80 - \$50)

Putting it all together

Now you know how to work out the outputs on a farm and the inputs that have been used to produce it, you can put the information together and work out how much profit you have been making. When we do this we call it a “Profit and Loss Account”.

Let's look at an example first. We will use the term “opening valuation” for items in store at the start of the year and “closing valuation” for items in store at the end of the year. These figures refer to the accounting year 1/10/07 - 30/9/08 and all are expressed as money values.



First work out the output figures in this table:

	Opening valuation	Purchases	Sales	Closing valuation	Output value
Cattle	6000	2000	-	12000	
Maize	1500	-	4000	1200	
Sunflower	-	-	2200	-	
Sheep	2000	100	1500	2400	

Then work out the input figures in this table:

	Opening valuation	Purchases	Sales	Closing valuation	Direct costs
Feed	-	1500	-	400	
Seed	600	-	-	-	
Fertilizer	5000	4000	-	4000	

Once we have worked out these figures we can construct a profit and loss account. We have done this on the following page, so you can look at that to see if you have made the calculations correctly.

A profit and loss account can be set out in a number of different ways but we will just look at one of them. We will first subtract the direct or variable costs from the total output to give a figure known as the Farm Gross Margin and then subtract the fixed costs from that. In this example we will assume a figure of \$3000 for all the fixed costs.

Profit and Loss Account for the Year 1/10/07 - 30/9/08

<i>Outputs</i>	\$
Cattle	4000
Maize	3700
Sunflower	2200
Sheep	1800
Total Farm Output (A)	11700
<i>Direct costs</i>	
Feed	1100
Seed	600
Fertilizer	5000
Total Direct Costs (B)	6700
Farm Gross Margin (A-B)	5000
less Fixed Costs	3000
Farm Profit	2000

So this is how you can estimate if your farming business is making a profit or a loss. It is the stepping stone to finding out how to increase your profit and thus your income.

If you can separate the direct costs between enterprises, it is even better. You will be able to work out which enterprises are making more profit than the others and see more clearly how you can improve your farm gross margin.



3 ARE YOUR NON-FARM ENTERPRISES PROFITABLE?

Aim

- To learn how to work out the profitability of non-farm enterprises.

If you conduct some form of business activity other than crop or livestock production as part of your livelihood strategy, you may wish to work out how much profit you are making from it. The process is very similar to the one we have just considered for farming enterprises and involves working out the value of what you produce or supply and comparing this to the costs you incur.

Many non-farm enterprises generate income very quickly and it is possible to work out the profit made for quite short periods of time, e.g. a day, week or month. Let us imagine you run a stall selling produce you buy each day. How would you work out the profit made during one month of your business?



It is not quite as simple as adding up all the sales income and subtracting the cost of everything you have bought. You will have to take into account expenses such as rent, transport, electricity and building maintenance, and make adjustments for changes in the amount of stock you have at the beginning and end of your accounting period. So your profit and loss account might look like this:

Sales of produce		500
- Purchased stock	300	
+ opening valuation	100	330
- closing valuation	70	
Gross margin		170
- transport and packaging costs		70
- stall maintenance		20
Profit		80

The rule for dealing with stocks of raw materials or purchased goods when adjusting input costs is as follows:

Purchases *plus* opening valuation of stock *minus* closing valuation of stock *equals* actual cost of inputs used.

If your enterprise involves manufacturing goods for sale, then you may have unsold goods carried over from one month to the next. So then you need to adjust your sales figure for a specific accounting period by subtracting the opening valuation of goods and adding the closing valuation.

Here is an example of a profit and loss account for a carpenter who makes furniture to sell:

Sales of furniture	700	
- opening valuation	250	750
+ closing valuation	300	
- Purchased raw materials	500	
+ opening valuation	160	420
- closing valuation	240	
Gross margin		330
- helper's wages		110
- transport		50
- part of cost of tools		70
Profit		100

You will see that we have included part of the cost of tools in this calculation. We call this depreciation. If this account is covering a period of one year and the tools used by the carpenter last for four years, then we should only include $\frac{1}{4}$ of the full cost of the tools in the calculation.

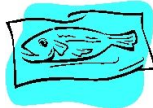


We will look at depreciation more closely in Book 3.



Here are the details of purchases and sales made in one day by Maria, who buys and smokes fish to sell in the village. Use these to construct a profit and loss account for her business:

- She buys one basket of fresh fish at the beach for ₦3,500.
- She pays someone ₦200 to carry the fish to her house.
- She buys a load of firewood for ₦1,000.
- She pays a girl ₦200 to help her with cleaning and smoking the fish.
- She pays ₦100 to transport the smoked fish to market.
- She pays a toll of ₦100 at the market.
- She sells the smoked fish in the market for a total of ₦6,000.



Maria doesn't have any overhead or fixed costs.

Your calculation should look like this:

Sales of smoked fish		6000
Less direct costs		
Fresh fish	3500	
Firewood	1000	
Wages	400	
Transport	100	
Market toll	100	5100
Profit		900

If Maria had decided at the end of the day to reduce her selling price and she only got a total of ₦5,000 for her smoked fish, would she have made a profit or loss that day?

(She would make a loss of ₦100)

If she sold some of her fish to a local restaurant and managed to get a total of ₦7,000 for all her smoked fish, how much profit would she have made?

(She would have made ₦1,900 profit)

4 THE IMPORTANCE OF MAKING PROFIT

Aim:

- To show how profit enables a business to grow
- To learn how to construct a capital account and work out the return on capital

The main purpose of a business enterprise is to make a profit. You commit your time and energy to the activity; you buy materials and resources to invest in it; and at the end of the day you hope it will enhance your life by producing a profit which you can use to buy things you and your family need.

One thing may be clear to you now though - profit is not the same thing as cash. If we include unsold produce as part of our output in a profit and loss account, then part of our profit is tied up in livestock, crops or other types of goods which we are waiting to sell at a later date. If we fail to sell them, our profit will turn to a loss in the next accounting period. Similarly we may have cash tied up in inputs that are in store.



However, it is the profit figure which tells you whether your business is sustainable and whether it can support you and your family. Let's suppose you have invested \$1000 in your farm business and it produces a profit of \$200. That means it has generated an output sufficient to cover the costs and enable you to reinvest the \$1000 if you choose and provide you with \$200 towards your living expenses. Alternatively you could use some of your profit to expand your business, e.g. by investing \$1100 the next year.



If you need more than \$200 for your living expenses though, you will reduce the amount of capital you have to reinvest and this will reduce your future profits. Similarly if you make a loss, you will have less to reinvest and no contribution to living expenses.

Business growth

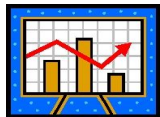
Let's look at how a business can grow when all profits are reinvested. In this example we will assume a regular annual profit of 10% of the amount invested.

Year	Resources at start of year	Profit	Resources at end of year
1	1000	100	1100
2	1100	110	1210
3	1210	121	1331
4	1331	133	1464
5	1464	146	1610

So this person has increased the amount invested in the business from 1,000 to 1,610 over five years.

Of course, in farming profits are never consistent every year. They go up and down as a result of weather, diseases, market prices and so on. Look at this example and see what happens to the amount invested over five years:

Year	Resources at start of year	Profit or loss	Resources at end of year
1	1000	100 Profit	1100
2	1100	20 Loss	1080
3	1080	10 Loss	1070
4	1070	90 Profit	1160
5	1160	140 Profit	1300



You can see how the amount of resources which this person has been able to invest has gone down following losses and up again after making profits. Now let's look at these figures again and see what happens when we also take money out of the business for personal use.

Year	Resources at start of year	Profit or loss	Personal drawings	Resources at end of year
1	1000	100 Profit	80	1020
2	1020	20 Loss	80	920
3	920	10 Loss	60	850
4	850	90 Profit	60	880
5	880	140 Profit	80	940

This farmer needs about \$80 for personal use but can you see how withdrawing this amount reduced the resources invested in the business in year 2? This was because he did not have any profit to cover his personal drawings. He reduced the amount he took out for personal use to \$60 the next year but he made a loss again and his resources reduced even further. So by now he only had \$850 invested in the business which would reduce his ability to make profit.



However things got better and by the end of five years the resources invested in the business had almost returned to the \$1000 he started with in year 1.

Another name for the resources someone invests in a business is capital and if all that capital belongs to the owner it is known as his "net worth" or "equity". Anyone who is running a business enterprise is always keen to see their net worth grow. That tells them that they are making a success of their business and managing to provide themselves with sufficient income to meet their living expenses.

So each year it is a good idea to make a "capital account", like this:

Net worth at start of year	1000
+ profit (or - loss)	100
- personal drawings	80
Net worth at end of year	1020

Return on capital

It is sometimes useful to express the profit we have made as a percentage of the capital we have invested. We call this the “return on capital”. The higher the return, the better our investment has been. This is how we calculate it:

$$\frac{\text{Profit we have made}}{\text{Capital we have invested (net worth)}} \times 100$$

How do you know how much capital you have invested? You have to make a list of all your assets - the things you use to operate your business. We call this list an inventory and you can prepare one whenever you like. It changes all the time of course - sometimes you have bags of fertilizer on the farm; a few weeks later that will be part of your growing crops. Later on the growing crop may have become harvested grain. Small animals grow into bigger ones and thus change their value. Machinery gets older and reduces in value.

A list of farm assets might look like this:

Stored inputs (e.g. seeds, fertilizer)	350
Growing crops	900
Livestock (e.g. cattle, pigs, chickens)	1200
Tools and field machinery	750
Irrigation equipment	1000
Storage sheds	500
Total assets	4700



So this farmer has invested \$4700. If he made a profit of \$470, what would his return on capital be?

$$(470 / 4700 = 10\%)$$

As we will see in the next section, it is important that the return on capital exceeds the interest rate when we start to borrow to expand our business.

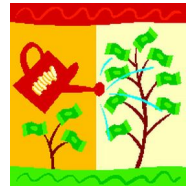
5 BORROWING TO GROW

Aim:

- To show how borrowing helps your business grow but increases the risk of losing your own capital if you make a loss
- To show how a balance sheet helps to assess the risk a business is facing

In Book 1 we saw that borrowing is one of the ways people manage their cash flow problems. If you do not have enough savings from past income to meet your personal or business needs at a particular time, borrowing from someone else is a way of using your future income in order to obtain what you need. You then have to make sure that you set aside enough of your future income as savings to repay the amount you have borrowed together with any interest the lender charges.

In this book we have been looking at the nature of business and how we invest resources to produce a profit. Many business owners deliberately borrow money to expand their operations by investing more resources than they could afford by themselves. When this results in profits which exceed the cost of borrowing the money, it is a successful strategy. The extra profit enables owners to expand their businesses even faster and increase their own capital or net worth.



Let's look at an example. Imagine you have \$1000 to invest in a business enterprise which produces a profit equal to a return on capital of 20%. You need to take at least \$100 out of the profit for your family consumption. How much capital would you have at the end of the year?

Your capital (net worth) at the start	1000
+ 20% return on capital (profit)	200
- personal drawings	100
Your capital (net worth) at end of year	1100

You have got \$1100 at the end of the year, an increase of \$100.

Now imagine you have borrowed \$500 to expand your production. You have to repay this at the end of the year and are charged interest at a flat rate of 10%. We will assume you still get a 20% return on capital.

Total amount invested (1000 + loan of 500)	1500
20% return on capital is	300
- interest charge (10% of 500)	-50
= a net profit of	250

Your capital (net worth) at start of year	1000
+ net profit	250
- personal drawings	100
Your capital (net worth) at end of year	1150

The loan has been repaid and you have increased your own capital by \$150 as a result of borrowing \$500 to increase the total amount you invest.



What would happen if you borrowed \$2000 to increase the amount you invest to \$3000? Assume the return on capital remains 20%, the interest rate remains at 10% and your personal drawings remain at \$100.

Here is the answer:

Total amount invested	3000
20% return on capital is	600
- interest charge (10% of 2000)	-200
= a net profit of	400

Your capital (net worth) at start of year	1000
+ net profit	400
- personal drawings	100
Your capital (net worth) at end of year	1300

These figures show that borrowing to expand a profitable business enables the owner to increase his or her capital, provided the rate of return on capital exceeds the interest rate. Imagine if the return on capital were 40% in the last example. Net profit would have been \$1000 and your capital would have increased by \$900, if you still only withdrew \$100 for family needs.

But what if you did not make any profit, maybe a loss of 10%? If you had not borrowed anything, your capital would have reduced as follows:

Your capital (net worth) at the start	1000
- 10% loss	-100
- personal drawings	-100
Your capital (net worth) at end of year	800

This is what would happen if you had taken a loan of \$500 to add to your own capital:

Total amount invested (1000 + 500)	1500
10% loss is	-150
- interest charge (10% of 500)	-50
= a net loss of	-200

Your capital (net worth) at start of year	1000
- net loss	-200
- personal drawings	-100
Your capital (net worth) at end of year	700

Your capital is now reduced to \$700.

What would happen if you had borrowed \$2000? Can you work it out?



Here is the answer:

Total amount invested	3000
10% loss	-300
- interest charge (10% of 2000)	-200
= a net loss of	-500
Your capital (net worth) at start of year	1000
- net loss	-500
- personal drawings	-100
Your capital (net worth) at end of year	400

Oh dear! Your capital has been reduced to \$400 after starting the year with \$1000.

This is the important message - there is a **RISK** attached to borrowing money. If you manage to invest loans profitably, you can increase your resources and your income. If you fail to make enough profit or make a loss, repaying loans and interest will soon reduce your capital.



If you are studying this book in a group, you can reinforce this message by playing the Credit Game. In this game, each person in the group pretends to invest a certain amount of money, some of which is borrowed.

Each person is then randomly assigned a rate of return and they then work out if they have reduced or increased their capital.

You will need six playing cards or some dice. Associate each card or number with a rate of return like this:

1 or Nine	-15%	4 or Queen	+15%
2 or Ten	0%	5 or King	+25%
3 or Jack	+5%	6 or Ace	+40%



If you do not have dice or playing cards, just write the rates of return on plain pieces of card.

- 1. Give everybody a piece of paper and pencil so they can write down their numbers and make calculations.*
- 2. Set an appropriate amount of starting capital which everyone will begin with.*
- 3. Ask each person to decide how much they will borrow to add to this at a given interest rate, e.g. 10% or 20%. Assume it is flat rate for simplicity.*
- 4. Now ask each person to roll a die or choose a card. Make sure they cannot see which card they are choosing and that you have shuffled them. The number rolled or card picked tells that person the rate of return they have to use to calculate their annual profit (or loss).*
- 5. Decide on the level of family drawings that each person will deduct from their profit or add to their loss.*
- 6. Now ask everyone to complete their calculations following this example:*



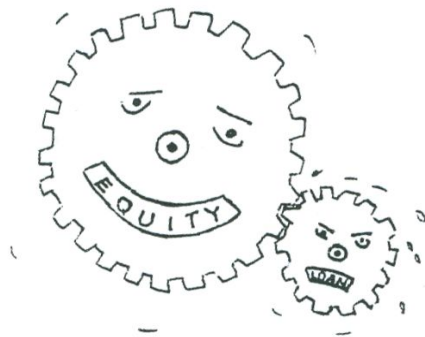
Own capital at start of year	1000
Amount borrowed	500
Total capital invested during year	1500
Annual return on total capital @ 15%	225
Less Interest on loan @10%	-50
Net profit	175
Less Family drawings	-125
Net addition to capital at end of year	50
Total capital at end of year	1550
Less loan repayment	-500
Own capital at end of year	1050

Make sure everybody understands their calculations. You can repeat the cycle several times if you wish to represent a number of seasons.



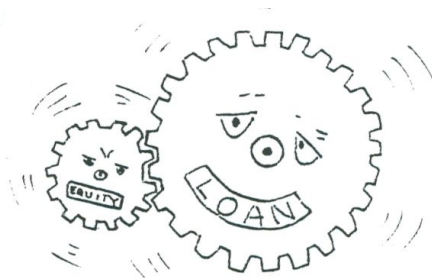
The credit game provides lots of discussion points about borrowing and fluctuating rates of return, which are very common in farming thanks to variations in yields and prices which are beyond the farmer's control. Some people should have increased their capital while others may have lost it. Compare the differences between those that borrow a lot and those that borrow a little.

When discussing risk associated with borrowing you may like to use the analogy of gear wheels. These mesh together, one driving the other around. So we can imagine a loan as a gear wheel that is driving round a wheel representing your own capital or equity.



This diagram represents a business with lots of equity and only a small loan. The loan has to work very hard to turn the equity wheel and it goes round quite slowly. So when the business is profitable, the loan will turn the equity wheel round in the growth direction but only a little at a time. If the business makes a loss, however, the equity will only reduce a little which is an advantage.

This diagram represents a business that has a loan that is much bigger than the equity. So the loan wheel can turn the equity wheel round very quickly. When the business is profitable the loan will help the business to grow very fast but when there are losses, the business will soon be bankrupt.



The balance sheet

Once we start to borrow money, it is useful to know how to prepare another type of financial statement which we call a balance sheet. This involves answering two questions about our business activities: what assets have we got and how did we pay for them?

Do you remember the list of farm assets that we looked at earlier? Here it is again but this time we have put another list next to it which shows how this farmer financed the acquisition of these assets. He has borrowed some money from a credit union and some from a trader. The rest he has financed himself. These sources of funds are known as “liabilities”.

ASSETS	\$	LIABILITIES	\$
Stored inputs	350	Credit union loan	1000
Growing crops	900	Trader	305
Livestock	1200	<i>Sub-total</i>	1305
Tools and field machinery	750	Own money (equity or net worth)	3045
Irrigation equipment	1000		
Storage sheds	500		
Total assets	4350	Total liabilities	4350

People don't usually know how much they have invested in their own business, so we work out their own share by subtracting the total of all the other liabilities from the total asset figure. The difference is the owner's own money or net worth.

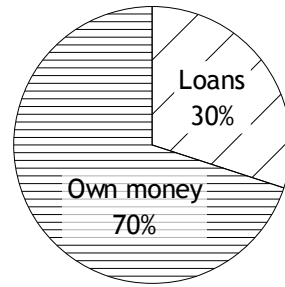


The total value of assets is always the same as the total liabilities and that is why we call it a “balance” sheet. If the figures don't balance then we must have left something out.

Once we have created a balance sheet, we can see how much risk we are running by working out what proportion of the assets is financed by loans. In the example above it is:

$$\frac{1305}{4350} \times 100 = 30\%$$

So we know that in this case the farmer has financed 70% of the business himself. He is not running a very big risk.



If an owner's capital or net worth is less than 50% of total assets, then he is running a much bigger risk of losing his money should he fail to make enough profit.



Tesfaye is a farmer. You are going to help him to make a balance sheet. After walking round his farm and asking him questions, you have collected the following information about his assets and liabilities:

- He has some cows and goats which he thinks would be worth \$350 if they were sold.
- There is \$100 worth of maize in store near the house.
- He has spent \$200 on the crops that are growing in the fields at the moment and he has \$50 worth of fertiliser left in store.
- His tools and equipment are worth \$450 but he still owes the coop \$150 for the sprayer he bought.
- He has received a bill from the vet for \$50 which he has not yet paid.
- He took a loan of \$300 from the Agricultural Bank this year and he owes them \$110 from a previous year's loan.
- He has \$50 in the post office savings bank and \$20 in his pocket.

Now use this information to construct Tesfaye's balance sheet.

Don't forget to work out his net worth by subtracting what he owes to other people from the total assets.

Your answer should look like this:

Balance Sheet for Tesfaye on 31 March 2009

ASSETS	\$	LIABILITIES	\$
Livestock	350	Money owed to coop	150
Maize in store	100	Money owed to vet	50
Growing crops	200	Agricultural Bank loan	410
Fertiliser in store	50	<i>Sub-total</i>	610
Tools and equipment	450		
Savings in post office	50	Net worth or equity	610
Cash in hand	20		
Total assets	1220	Total liabilities	1220

*What percentage of his farm business does Tesfaye own? (It's 50%)
Do you think he is borrowing too much?*

Now try to work out a balance sheet for your business and find out how much you have financed by borrowing and how much by investing your own money?

It is best to make a list of assets first. You can choose any day in your accounting year to do this but remember assets change all the time during the production cycle. Balance sheets are like a photograph of the business on a particular day. So you should list what you owe other people on the same day and then work out your net worth.

In this chapter we have emphasised the importance of profitability when money is borrowed to invest in a business enterprise. If loans are not used to increase profit, they have to be repaid with interest from current income which may reduce the amount available for family consumption. So the final chapter of this book will look at some ways of identifying profitable strategies.

6 IMPROVING THE PROFITABILITY OF ENTERPRISES

Aim:

- To introduce the idea of a SWOT analysis
- To learn how to identify ways of improving enterprises
- To introduce the idea of budgeting

Conducting a SWOT analysis



At the beginning of this book we looked at the concept of a livelihood strategy and how people often undertake a mix of activities, some of which can be called business enterprises because we try to make a profit from them.

We have looked at ways of calculating how much profit we make and have seen that making enough profit is essential for our businesses to survive, particularly if we borrow money to expand our business enterprises. So let us suppose you would like to improve your profit and make a bigger income to meet your family needs and perhaps to save up more for future investment or emergencies. How might you begin?

A good method is to conduct a SWOT analysis. This means that we will think about the following things:

- S - what Strengths we have
- W - what our Weaknesses are
- O - what Opportunities are out there for us to exploit
- T - what Threats are waiting to make things more difficult

Strengths and weaknesses are “internal” - they are about ourselves and our businesses. Opportunities and threats are largely “external” - they are about the environment in which we operate. Let's look at some examples.

Strengths may include: the quality of our farm land, access to water, closeness to markets, our experience and skills, our enthusiasm for an enterprise, availability of family labour, ownership of equipment, storage facilities or transport, good quality livestock and so on.

Weaknesses tend to be opposites of strengths, e.g. poor soil, remoteness from markets, lack of experience, insufficient labour, inadequate tools, poor quality products, too many unprofitable activities. Very often it is poor management and decision-making that is a major weakness but it is not easy for people to admit that of themselves, although it is something that can be improved.

Opportunities arise for many reasons: increased demand for a product, the chance to sell through a cooperative, lower interest rates on loans, government grants, e.g. for irrigation or drainage, new types of seeds, higher prices in more distant markets, new ways of adding value to your products.



Threats always exist, e.g. drought, pests and diseases, floods, illness affecting you or your family, price changes, competition from other suppliers, new regulations which affect your business.

It is a good idea to try and write down the things you think of when making a SWOT analysis. You can divide a large piece of paper into four sections like this:

<u>STRENGTHS</u>	<u>WEAKNESSES</u>
<u>OPPORTUNITIES</u>	<u>THREATS</u>

A SWOT analysis will help you reflect on your current livelihood strategy. Are you making the most of your strengths and opportunities? Can you do anything to overcome weaknesses and minimise the effect of threats to your livelihood?



Why not try to complete a SWOT analysis on your business? It may be easier to do this with someone else, so you can ask each other questions.

Earning more from enterprises

The results of your SWOT analysis should tell you where to look more closely for ways to increase your profit. It will help you decide where to focus your attention. If you grow vegetables just for home use or keep cattle simply as a form of savings, there is no need to be concerned with their profitability.

However, let's suppose that you would like to increase the profit you get from crop production. What questions should you ask yourself?



Here are some suggestions:

1. Could you be growing more profitable crops?
2. Could you increase the yield of your crops?
3. Could you expand the area you plant?
4. Could you sell at higher prices or buy inputs more cheaply?

Taking note of price trends and being aware of market demand for new products or new varieties might suggest a change of cropping plan could be worthwhile. Farmers often like to do things the way they have always been done but they should not shut their eyes to new possibilities that may arise in changing markets. Of course such decisions require careful planning to ensure that new crops will grow well on the available land and can be readily managed and delivered to market in good condition.

You should also estimate the input costs and output value you might expect from a new crop and compare the predicted profit with that from your existing crops. All ideas we may have to increase profit should be examined in this way - a process known as budgeting.



Now suppose you would like to increase the yield you are getting from your crops. Can you list the main factors that you should review?

Your list may have included:

- The quality of ground preparation
- Variety used
- Time of sowing / planting
- Seed rate / plant population
- Level of essential nutrients - N, P, K - in the seedbed
- Weeding and pest control
- Use of fertilizer during growth
- Irrigation
- Place in crop rotation



It is often helpful to compare your own situation and results with other farmers and through this process work out how you could improve your production methods and subsequent yields.

Expanding the area of crops that you grow is likely to be dependent on using machines or animal power and we will discuss this in the next book in this series.

If you have managed to increase yields and maybe the area you grow, it would all be to no avail if you cannot sell the produce and obtain a price that covers your costs and leaves a profit. It is always important to think about your markets and place as much effort into selling your produce as growing it.

To obtain higher prices you may need to improve the quality of your products. This could involve choosing a different variety, grading and sorting your crop better, improving your storage conditions, and using better packing materials.



Perhaps you could store your produce for longer and sell when prices are higher. Perhaps you could transport your produce to a town where demand is higher. Perhaps you can collaborate with other farmers and negotiate jointly with dealers to get better prices.

Now let's see how careful analysis of costs and returns can enable us to improve the profit we get from an enterprise.

Do you remember Maria? You worked out how much profit she made from buying fish to smoke and sell in the market. She processed one basket of fish and made a profit of ₺900.



Now work out how much profit she made another day when she was able to buy two baskets of fish. Here are the costs she incurs:

- Two baskets of fresh fish at ₺3,500 per basket.
- Payment of ₺200 per basket for someone to carry the fish to her house.
- A load of firewood for ₺1,000.
- Payment of ₺400 to the girl who helps her with cleaning and smoking the fish.
- Payment of ₺100 per basket to transport the smoked fish to market.
- Market toll of ₺100.

She sells each basket of smoked fish for ₺6,000.



Here is the answer:

Sales of smoked fish		12000
Less direct costs		
Fresh fish	7000	
Firewood	1000	
Wages	800	
Transport	200	
Market toll	100	9100
Profit		2900

Can you work out how much profit per basket she is making?

She processed and sold two baskets of fish so if you divide ₺2900 by 2 you can see that Maria made a profit of ₺1450 per basket. This is much better than the ₺900 profit she got when she processed one basket of fish. Why is that? You may need to look back at the figures on page 17.

You should have discovered that two of Maria's costs did not increase when she decided to process two baskets of fish - the firewood and the market toll stayed the same. To heat the oven sufficiently she needs one bundle of firewood but then she can smoke up to three baskets of fish. So she is spreading the cost of the firewood and market fees if she processes more fish and this improves the profitability of her enterprise.

Starting a new enterprise

When we start a new enterprise it is important to estimate how much profit we are likely to make. Here is an example of a budget to estimate the profitability of growing tomatoes to sell:

Output	\$	\$
50kg tomatoes sold at \$2 per kg.	100	
Total output		100
Direct costs		
Seeds	10	
Fertiliser	25	
Chemicals	15	
Bags	10	
Market licence	5	
Transport	11	
- Total direct costs		76
Gross margin		24
- A share of the cost of tools used (depreciation)	4	
Profit		20

As you can see this looks very like the profit calculations we made earlier. However there is no reference to opening and closing valuations because, in a budget, we are looking into the future and can ignore time specific variations.

It is important to remember that in a profit budget we are trying to guess what inputs we will use, how much we will sell and what price we will get. So we should always ask ourselves what would happen if any of our assumptions turn out to be wrong. For example, how much profit would you make from the tomatoes if you could only sell them at \$1 per kg or could only sell half of them?

The output would be just \$50 and the enterprise would not make any profit. In fact there would be a loss of \$30. So it would only be advisable to embark on this enterprise, if you were very sure of your market and price estimates.

It is also important to consider whether introducing a new enterprise means giving up all or part of another. If this is the case, you would have to compare the projected new income with the one you are giving up to be sure that it is a wise decision.

This is a very brief introduction to budgeting as a means of testing the ability of new enterprise strategies to increase profit. In Book 1 we learned how to make a cash flow plan which is another kind of budget. The cash flow plan enables us to see whether we can purchase things when we need them and whether we will always have enough to meet our household needs. In Book 3 we will be using both these budgeting techniques to consider the financial impact of purchasing and using machinery in your business.



Try making a simple profit budget for a new enterprise that you would like to carry out.

Acknowledgements

The fish smoking enterprise example was derived from “Simple Book-keeping and Business Management Skills” published by FAO.

The diagrams on page 4 came from “The group enterprise resource book”, also published by FAO.

Many of the other financial examples relating to the calculation of outputs and inputs, business growth and capital accounts were based on examples from the following booklets, written by R. Critchley and published by the North of Scotland College of Agriculture (now part of the Scottish Agricultural College):

Understanding Your Farm Accounts (1982)

Business Growth and Your Farm Accounts (1985)